

The

November 2001

Ballarat Naturalist



Stella Bedggood Memorial Lecture

A History of the World in 45 Minutes

Speaker: Professor Ian Plimer

In the beginning. Well not quite, but 4500 million years ago was the time that Professor Ian Plimer used as a starting point for his lecture '*A History of the World in 45 Minutes*'. He was our speaker for the club's twenty-third Stella Bedggood Memorial Lecture. Ian Plimer is the Professor of Geology at the University of Melbourne. He has published more than 120 scientific papers and books. He delivered his lecture without using slides or overheads or notes. He also did not use a lot of geological terms that can be confusing to most people.

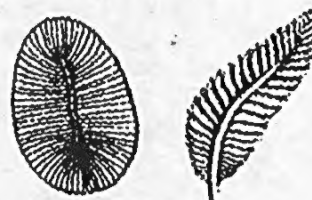
The solar system was a very inhospitable place early in its history some 4500 m.y. ago. The earth was a molten planetoid, half the size it is today, but growing rapidly by gobbling up rubble from the dust cloud swirling around the young Sun. At this time another molten planetary mass, about the size of Mars collided with Earth. The cores of the two fused and the impact splattered the outside bits into space. Some slow-moving pieces of the Earth made the early bits of the Moon. Its size and gravity were such that it orbited the Earth and not the Sun.

The Earth has been cooling down for the last 4500 m.y. The earth's early atmosphere was probably derived from volcanoes expelling gases trapped deep within Earth. However a small part of the atmosphere may have been the result of material brought to Earth by comets composed of dirty ice. The Earth's early landscape probably looked like the moon. The temperature of the steamy carbon-dioxide rich atmosphere would have been so high that no steam could condense into raindrops. Eventually both the surface of the earth and the atmosphere were cool enough for rain to fall and for there to be running water to accumulate on the surface. As rainfall and running water became a regular occurrence, then the shifting of gravel, sand

and mud down watercourses would have changed the face of the Earth.

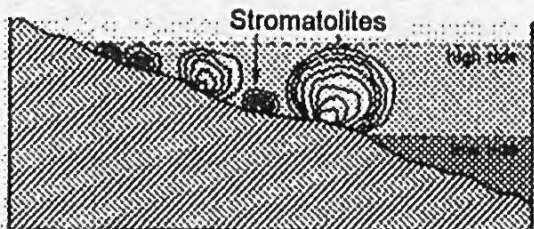
The oldest known rocks which were once mud, sand, silt and gravel occur in Greenland. These rocks are 3800 m.y. old and they contain carbon compounds with a biological origin. There must have been a solid crust which was undulating to allow erosion by water. The atmosphere had a very low oxygen content and carbon dioxide was being recycled from the atmosphere to form rocks.

Professor Plimer suggested that life on earth may have originated from a meteorite from Mars where there once was running water. A meteorite from Mars that was found in Antarctica had minute filament-shaped tubes of chemicals that were possibly fossils of bacteria. On Earth life is being found in some bizarre environments. At Paralana in the far north Flinders Ranges of SA more than fifty species of bacteria exist in water that is alkaline, radioactive and at 62 degrees C. The Paralana hot springs are a window into the past on Earth, Mars and elsewhere.



Ediacaran Fossils,
Flinders Ranges
(Plimer)

For higher forms of life oxygen was necessary and it was photosynthetic bacteria that released this gas into the atmosphere 2400 m.y. ago. Rocks started to rust and iron oxide was deposited onto the sea floor. Stromatolites peaked in abundance 1200 m.y. ago, then declined. Most major animal groups appeared in the fossil record about 540 m.y. ago. The first vertebrates appeared 530 m.y. ago and land plants colonised continents 470 m.y. ago. Hominids only arrived 4 m.y. ago.



During the period that life has existed on earth there have been times when most of the species on earth were wiped out by various catastrophes, such as meteorite impacts, volcanic eruptions and climate change.

Professor Plimer said that climate change was normal and has been happening for a long time. The Earth has changed from an ice-house to greenhouse conditions many times. In Roman times grapes could be grown in England. He suggested that times of warfare and collapse were due to stress caused by adverse climatic periods.

This report covers only a fraction of what Professor Plimer had to tell us. After his talk he signed copies of his recent book: 'A Short History of Planet Earth' published by ABC Books.

Les Hanrahan.

Excursion:

An Integrated Approach to Agriculture and Conservation

David Hay—Landscape Architect; Charlie Fairbairn-Calvert—Farmer

David Hay studied Landscape Architecture at RMIT. For his final year project in 1989 he prepared a farm plan for Banongill East, a 5000 acre property south of Skipton owned by Charlie Fairbairn-Calvert. David has an on-going relationship with both RMIT and the property owner in which students annually visit the farm, planting over 8000 trees annually and seeing the practical application of landscape assessment to farm planning and broad-acre development.

The property consists of stony rises—60%, swamps—20% and the remainder volcanic plains. The rugged stony rises resulted from lava flows erupting from nearby Mt. Widderin. These flows disrupted pre-existing drainage courses, creating swamps which now divide the stony rises from the plains. Thus the farm has 3 major landscape types, each of which was assessed for its native vegetation, soil types, water and optimum land use. Prior to the plan's implementation, there were no trees (other than red gums bordering the swamps,) due to the lack of regeneration after a 1945 bushfire and subsequent grazing by sheep and rabbits. Charlie's grandfather had drained the swamps.

A precedent for this approach had been created by Charlie's father-in-law John Fenton on his property "Lanark" near Hamilton. Back then the concept was revolutionary, and in an article in *The Age* 7/4/84 John's wife Cicely stated that they had "taken an enormous amount of knocking on the way.....other farmers have seen him as that 'ridiculous tree man'. Today both farms are testament to this integrated approach which works with nature, not against it.

The farm plan has several objectives: to reduce wind speed, increase water retention, reduce and control fire hazard, provide shelter for stock, habitat for wildlife and integrate agriculture with conservation. Diversification was necessary in the face of low wool prices so agro-forestry and eel production were planned.

The stony rises were so boulder-strewn that the most rugged areas were fenced off, allowing indigenous woody species to regenerate. The remnant red gums were also isolated so that an understorey could develop. The swamps were re-established by re-instating a small dam, permitting eel farming which, if dry years had not intervened, had the potential to generate revenue of \$20,000 per year. A co-operative brolga breeding program



Brolgas
(Hill)

was established with Serendip Wildlife Research Station. The plains were re-planted with clumps of native shrubs and trees in "decagons" - 10-sided enclosures which will provide mid-paddock shelter and wildlife habitat. Fence and drainage lines were also planted.

In the early stages the local Landcare group disposed of 7000 pairs of rabbits in 2 months; 6000 merino ewes now take advantage of the shelter belts while on the plains 1000 acres of canola and cereal crops are grown, with 500 acres of hay, the latter sold to regional dairy farmers.

A number of agro-forestry trials were implemented; shelter belts planted with a mix of oaks, wattles and eucalypts with different sizes and maturing times have not worked well. Mexican cypresses have been pruned to provide sawlogs with few knots; blackwood and she-oak have potential as craft timber and are hardy, but lack sufficient markets. On the other hand pine plantations are disease-free, have established milling and marketing facilities and are estimated to generate income of \$30-50,000 per ha.

After an introductory talk by David and Charlie using the farm plan maps we piled into the ute and trailer for a tour of the property. In between short heavy downpours we inspected the various plantings, appreciated the obstacles created by the stony rises and went down to the shore of "Lake Widderin" which, after several good wet years can be 2-3m deep. Charlie had started to build a small boatshed in the hope of using a small dinghy—the uprights now stand as lone sentinels tens of metres from the water's edge!



Birds seen included Whistling Kite, Swamp Harrier, Pacific Black Duck, Black-winged Stilts, a flock of Black-tailed Native Hens and Black Swans. The lichen-encrusted basalt blocks formed a distinct edge to the lava flow and boundary to the swamp. Old twisted Red Gums grew on this rocky shoreline forming fascinating shapes, while the plains could be seen in the distance.

After lunch in the shelter of a machinery shed we moved on to Skipton Common, our guide for the afternoon being Gordon Wise who had a deal of local knowledge. In an area of 200 acres bordered by Mt. Emu Creek a variety of small plants was found almost hidden in the grass. Never cultivated, this plot has only been grazed by cattle and horses. Small pools occupied depressions in the basalt surface after wet weather and were home to water snails and buttercups.



Red Gum

Apparently platypuses are plentiful in the creek and it certainly looked healthy with Water Ribbons growing in the fast-flowing water

and Red Gums lining the edges. Plants in the Common included Milkmaids *Burchardia umbellata*, Beautyheads, Blue Devil *Eryngium ovinum*, Prickfoot *Eryngium vesiculosum*, Kangaroo Grass, Creeping Bossiaea *Bossiaea prostrata*, Scaly Buttons *Leptorhynchus squamatus* and Satin Everlasting *Helichrysum leucopsidium*, a spear grass, Austral Stork's-bill *Pelargonium australe*, and a rice-flower *Pimelea humilis*.

Gordon then took us to a paddock on the Spring Hill section of the Notman property where a unique Red Gum was growing. Its trunk had divided into several massive branches, some of which arched over and down to the ground where they "rested" before sweeping upward again. However one of these huge arched branches seemed to have divided into two, framing a large space, and then rejoined, continuing to grow. How? Why?

Editor.

Members' Observations

Reedy Swamp, Shepparton 5-10-01

Taking time out from a photography convention, I spent a morning at a wetland on the outskirts of Shepparton. Part of the area consists of reeds with many tree stumps varying in height from 0.5m to 5m, while open water constitutes the rest. Red Gums line the shore.



Perched on the higher tree stumps which contained hollows were pairs of galahs, while the lowest ones provided rests for Royal and Yellow-billed Spoonbills. At least four Swamp Harriers were present, one of them sitting on a stump for a lengthy period, permitting close study. Shelduck, a Great Egret, Little Pied and Little Black Cormorants and Straw-necked Ibis moved around, Welcome Swallows darted hither and yon, while on the open water Pelicans did circuits and bumps among the Black Swans. A Water Rat swam past, its white-tipped tail conspicuous. Two Hoary-headed Grebes were paddling peacefully when in the midst of my field of view a large fish propelled itself out of the water and fell back with a resounding splash; it did this three or four times, much to my astonishment. Was it a Murray cod? I've never seen one before so if anyone has any ideas as to its identity and why it might have behaved in this way.....

As I walked along the shore amongst the Red Gums and thin understorey, Red-browed Finches and Superb Fairy-wrens preceded me on the ground and a Striated Pardalote bobbed around the lower branches. Some trees were in blossom and White-plumed Honeyeaters were busy; Kookaburras called, as did Noisy Miners, and in the background was the plaintive peep-peep of the Little Grassbird from the near-by reeds. Numerous Purple Swamp-hens and Mudlarks picked their way along the muddy shore. A most rewarding morning's bird-watching!

Editor.

Bird Observations at Long Point Flora Reserve

Long Point Flora Reserve is 15 km north of Ballarat along Gillies Road. Despite mining by the Chinese in the nineteenth century and clay extraction more recently the area has good remnant vegetation. There is an unusual association of Candlebark *Eucalyptus rubida*, Black She-oak *Allocasuarina littoralis* and Silver Banksia *Banksia marginata*. The banksias have hollows inhabited by feral bees and young banksias are regenerating from seed.

For the Atlas of Australian Birds I have been making 20-minute observations of a 2-hectare search area for the past 3 years. As a comparison I have also been observing in an adjacent pine forest. During this time I have made 13 visits to the Flora Reserve and 7 visits to the pine forest.

The average number of species per visit to the Flora Reserve is 11 with a total of 36 different species. In the pine forest 16 species have been observed at an average of 4 species per visit. 14 species have been common to both areas, with an additional 22 species in the native vegetation.

The tables show the birds seen in each habitat and the numbers of times each species has been observed.

Species in Flora Reserve & Times Seen

Superb Fairy-wren	11	Australian Magpie	11
Brown Thornbill	9	Little Raven	9
Striated Pardalote	9	Crimson Rosella	8
Grey Fantail	8	Blackbird	7
Yellow-faced Honeyeater	7	Red Wattlebird	6
New Holland Honeyeater	5	Grey Currawong	5
Galah	4	Starling	4
Common Bronzewing	4	Eastern Yellow Robin	3
Yellow-rumped Thornbill	3	White-naped Honeyeater	3
Eastern Rosella	2	Grey Shrike-thrush	2
Striated Thornbill	2	Brown-headed Honeyeater	2
White-eared Honeyeater	2	Australian Hobby	1
Musk Lorikeet	1	Long-billed Corella	1
Welcome Swallow	1	Satin Flycatcher	1
Scarlet Robin	1	Golden Whistler	1
Rufous Whistler	1	Crested Shrike-tit	1
Black-faced Cuckoo-shrike	1	White-winged Triller	1
Buff-rumped Thornbill	1	Varied Sitella	1
European Goldfinch	1		

Species in Pines & Times Seen

Superb Fairy-wren	7	Little Raven	4
Grey Fantail	3	Crimson Rosella	2

Black-faced Cuckoo-shrike 2
 White-naped Honeyeater 2
 Australian Magpie 2
 Long-billed Corella 1
 Golden Whistler 1
 Buff-rumped Thornbill 1

Brown Thornbill 2
 Yellow-faced Honeyeater 2
 Blackbird 2
 Galah 1
 Yellow Robin 1
 Grey Currawong 1

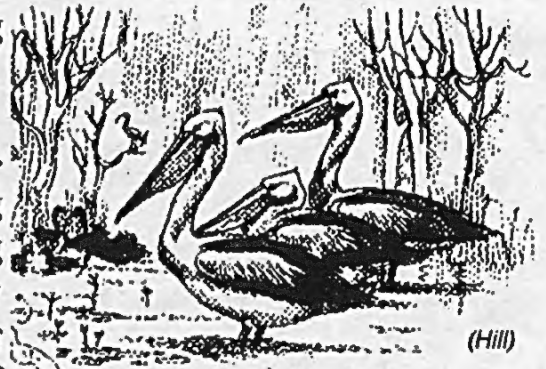
9000 bird observers have contributed to the Atlas. Surveys will continue until the end of 2001. Further information on the Atlas project is available on the internet, www.birdsaustralia.com.au/atlas.

John Gregurke.

Morning on the Darling, Wentworth, NSW. July 2001.

The fish are jumping. Above me the steady level flight of the Pelicans changes as their undercarriage is lowered and they land. Three swim abreast, entering the field of my binoculars and ruffling the water's surface with their bow waves. Pink bills reflect in the water, making a mirror image while fish jump in the widening 'V' of their wash. A Darter, its body submerged, neck erect, shakes a fish, juggling it, throwing it in the air, dropping it, diving after it until at last it can be swallowed. Then, perching on a dead branch it spreads its wings to dry.

No wind, a thin cover of cloud, the pelicans patrol. Little Black Cormorants gather and a feeding frenzy erupts, silver flapping bodies vanishing down black throats. The shoal moves gradually upstream and the cormorants follow. I wander along the river bank, passing the massive boles of ancient River Red Gums, red-brown, great burls like giant boils on their trunks. Bunches of tiny pointed buds hang down, and between all these the noisy miners fly down to the water's surface to pick up insects or perhaps have a drink.



Carol Hall.

October Meeting Points

The Vice-President, Greg Binns welcomed 55 people including many visitors and members of the Bedgood family. The Guest Lecturer was Professor Ian Plimer, Professor of Geology at University of Melbourne. He spoke on "The History of the World in 45 Minutes". He covered this enormous topic in an interesting manner without the use of many geological terms. Maureen Christie thanked him for informative lecture, congratulated him on his ability as a storyteller and presented him with a small gift.

Calendar

November

- | | | |
|----------|---|--------|
| Fri. 2 | Meeting: Richard Naisbitt: <i>Raptors</i> | |
| Sun. 4 | Excursion: <i>Inverleigh Flora and Fauna Reserve</i> with Lyndsay Fink. | |
| Mon. 12 | Mid-month Excursion: Lal Lal Historic Reserve with Greg Binns.
(postponed from last month) | |
| Mon. 26 | Book Meeting @ John Gregurke's 3pm | |
| Tues. 27 | Committee Meeting @ Claire Dalman's | 7.30pm |

December

- Fri. 7 Meeting: Greg Binns—*Cape York*, Helen Burgess—*Galapagos*.
Sun. 9 Excursion: Yarrowee and Leigh Rivers with Gail Whyte.

Supper Duty for

November: Kenneth and Joan Riddell

December: Joan Andrews & ?

Committee

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Vice-President..... Mr. Greg Binns

Secretary..... Mr. John Gregurke

Treasurer..... Mr. Bob Curtain

Miss Helen Burgess.....

Miss Maureen Christie.....

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Mrs. Carol Hall (Editor).....

Mr. Les Hanrahan.....

Mr. John Mildren.....

Ms. Gail Whyte.....

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Meetings are held at the Ballarat Horticulture Centre, cnr. Gregory & Gillies Sts (VicRoads 254 F8) on the first Friday of the month at 7.30pm.

Excursions: Depart from Creswick Plaza, Creswick Rd., Ballarat (VicRoads 255 M10) at 9.30am unless otherwise specified.

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